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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/654,404 | 09/04/2003 | Knut Beekman | WLJ.051D | 5467 |
| 20987 | 7590 | 12/28/2004 | EXAMINER | |
| VOLENTINE FRANCO, & WHITT PLLC ONE FREEDOM SQUARE 11951 FREEDOM DRIVE SUITE 1260 RESTON, VA 20190 | | | TOLEDO, FERNANDO L | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2823 | |

DATE MAILED: 12/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|--|---------------------------------------|---------------------------------------|---|
| <p align="center">Office Action Summary</p> | Application No. 10/654,404 | Applicant(s) BEEKMAN ET AL. | |
| | Examiner Fernando L. Toledo | Art Unit 2823 |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16-20 and 24-26 is/are allowed.
- 6) ☒ Claim(s) 21 and 22 is/are rejected.
- 7) ☒ Claim(s) 23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 6) <input type="checkbox"/> Other: _____ |
|--|--|

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Kondo et al. (U. S. patent 6,001,736 A).

In re claim 21, Lee discloses treating the exposed surface with hydrogen or a gaseous source of hydrogen in the presence of plasma (Column 10, Lines 17 – 26); and depositing an aluminum nitride layer over the exposed surface (Column 11, Line 46) wherein the hydrogen treatment occurs prior to or during the deposition of the aluminum nitride layer (Column 19, Lines 60 – 67 and Column 20, Lines 1 – 12).

Lee does not disclose wherein the plasma is supplied by a Reactive Ion Etching (RIE) process.

Art Unit: 2823

However, Kondo, in the U. S. patent 6,001,736 A; figures 1A – 13 and related text discloses treating an exposed surface with a hydrogen plasma treatment carried out by using RIE plasma since it is preferable to apply high frequency bias to a holder supporting the substrate in order to increase the energy and directivity of ions (Column 18, Lines 24 – 34).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use RIE plasma in the invention of Lee, since as taught by Kondo, RIE is preferable to apply high frequency bias to a holder supporting the substrate in order to increase the energy and directivity of ions.

4. In re claim 22, Lee in view of Kondo discloses wherein the hydrogen treatment time is less than 15 minutes (Column 16, Line 24 of Kondo).

Allowable Subject Matter

5. Claims 16 – 20 and 24 – 26 are allowed over the prior art of record.

Claim Objections

6. Claim 23 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

7. Applicant's arguments see pages 5 and 6, filed 14 October 2004, with respect to claims 16 – 20 and 24 - 26 have been fully considered and are persuasive. The rejection of claims 16 – 20 and 24 – 26 has been withdrawn.

8. Applicant's arguments regarding claim 21 filed 14 October 2004 have been fully considered but they are not persuasive for the following reasons.

9. Applicant contests that Lee teaches away from using a bias voltage for the hydrogen treatment.

Examiner respectfully submits that Lee does not teach away from using a bias voltage, but instead merely states that it is an optional step in the hydrogen treatment step, depending on the technique used for generating the hydrogen plasma. Teaching another way does not necessarily means teaching away. The 35 U.S.C §103(a) rejection to claims 21 and 22 stands and it is considered proper.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

Art Unit: 2823

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fernando L. Toledo whose telephone number is 571-272-1867. The examiner can normally be reached on Mon-Thu 7am to 5:30pm.

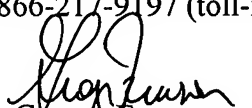
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 571-272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



FToledo

21 December 2004



George Fourson
Primary Examiner
Art Unit 2823